

DS LANDERS

DATA SCIENCE

تحلیل داده و هوش تجاری

جلسه اول - مقدمه

DATA ANALYSIS & BI

INTRODUCTION

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Content

- About the Course
- What is Data Analysis
- What is BI
- How to become a Data Analyst
- Data Models
- BI Tools
- KPI/OKR
- Statistical Tests
- Agile management

About the Course

Expected Outcomes:

- Understand key concepts,
- tools,
- methodologies,
- best practices.



Story

Imagine you're a manager at a retail company. The market is changing, competition is fierce, and you need to make decisions that keep the company profitable and competitive. You're flooded with data: sales data, customer reviews, inventory levels, and more. But raw data isn't helpful on its own; it's like trying to drink from a fire hose. This is where data analysis and business intelligence come in.

What is Data Analysis?

- The process of inspecting, cleaning, and transforming data.
- Aims to discover useful information and conclusions.
- Importance: Uncover trends, patterns, anomalies, and insights.
- Involves various techniques and tools.
- Helps in decision-making and predictions.
- Application examples: Market research, sales forecasting, and risk management.

Data Analysis Applications

- Customer Segmentation
- Inventory Management
- Financial Analysis
- Sentiment Analysis
- Fraud Detection
- Churn Prediction
- Operational Efficiency
- Product Recommendations
- Supply Chain Optimization
- Predictive Maintenance
- Healthcare Analytics
- Real Estate Analysis
- Traffic and Route Analysis
- Learning Analytics
- Energy Consumption Analysis
- Agricultural Data Analysis

What is BI (Business Intelligence)?

- Definition: Technologies, applications, and practices for the collection, integration, analysis, and presentation of business information.
- Goal: Enhance business operations and drive business strategy.
- Used to collect, integrate, analyze, and present business data.
- Helps organizations make informed decisions.
- Components: Data warehouses, data visualization, dashboards, and data discovery tools.



“Without big data analytics, companies are blind and deaf.”
Geoffrey Moore

How to become a Data Analyst

1. Excel / Google Sheet



2. Data Warehouse (DW)



3. SQL (RDBMS)



4. Tableau



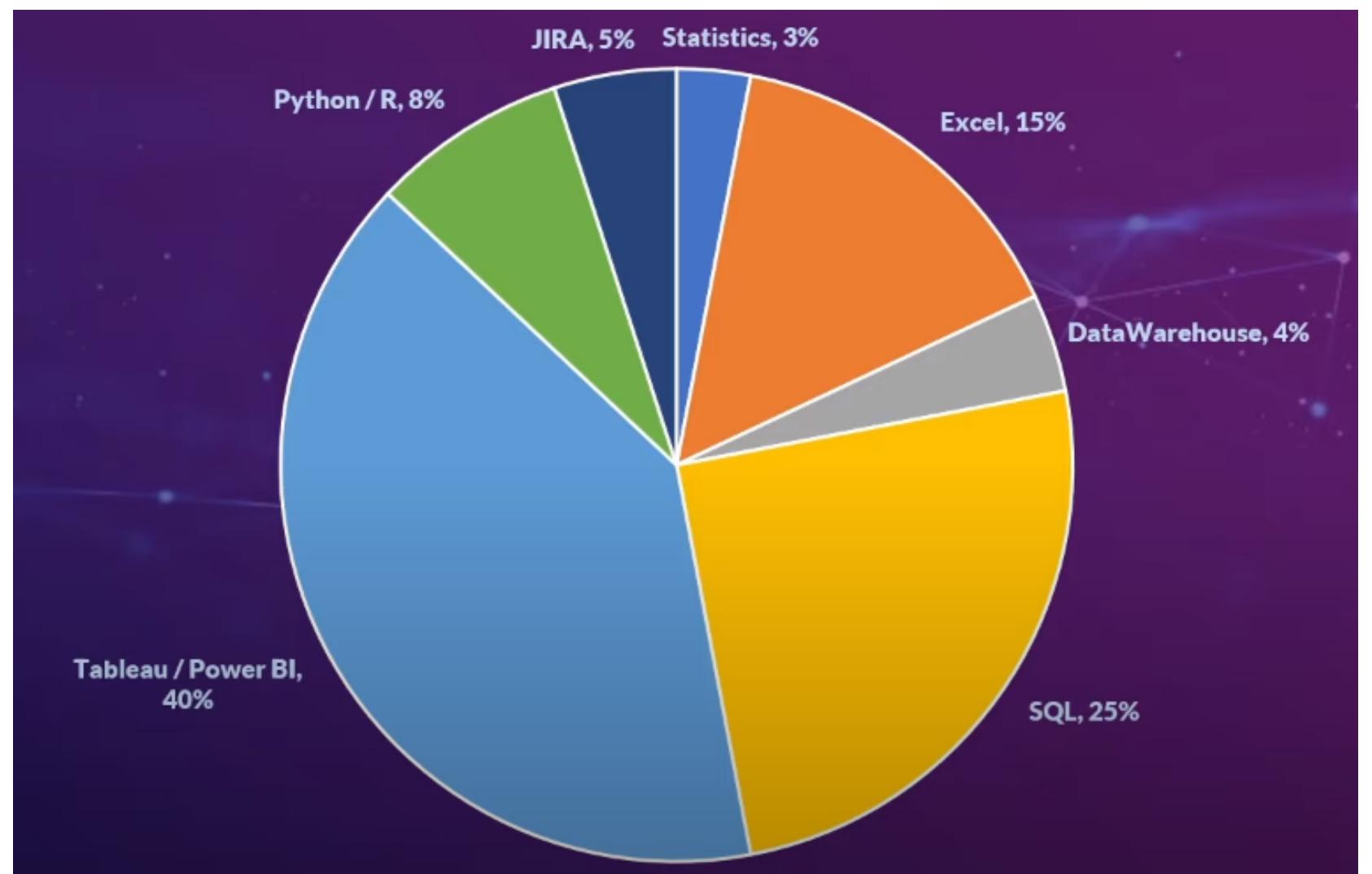
5. Power BI (Power Query | DAX)



6. Python / R



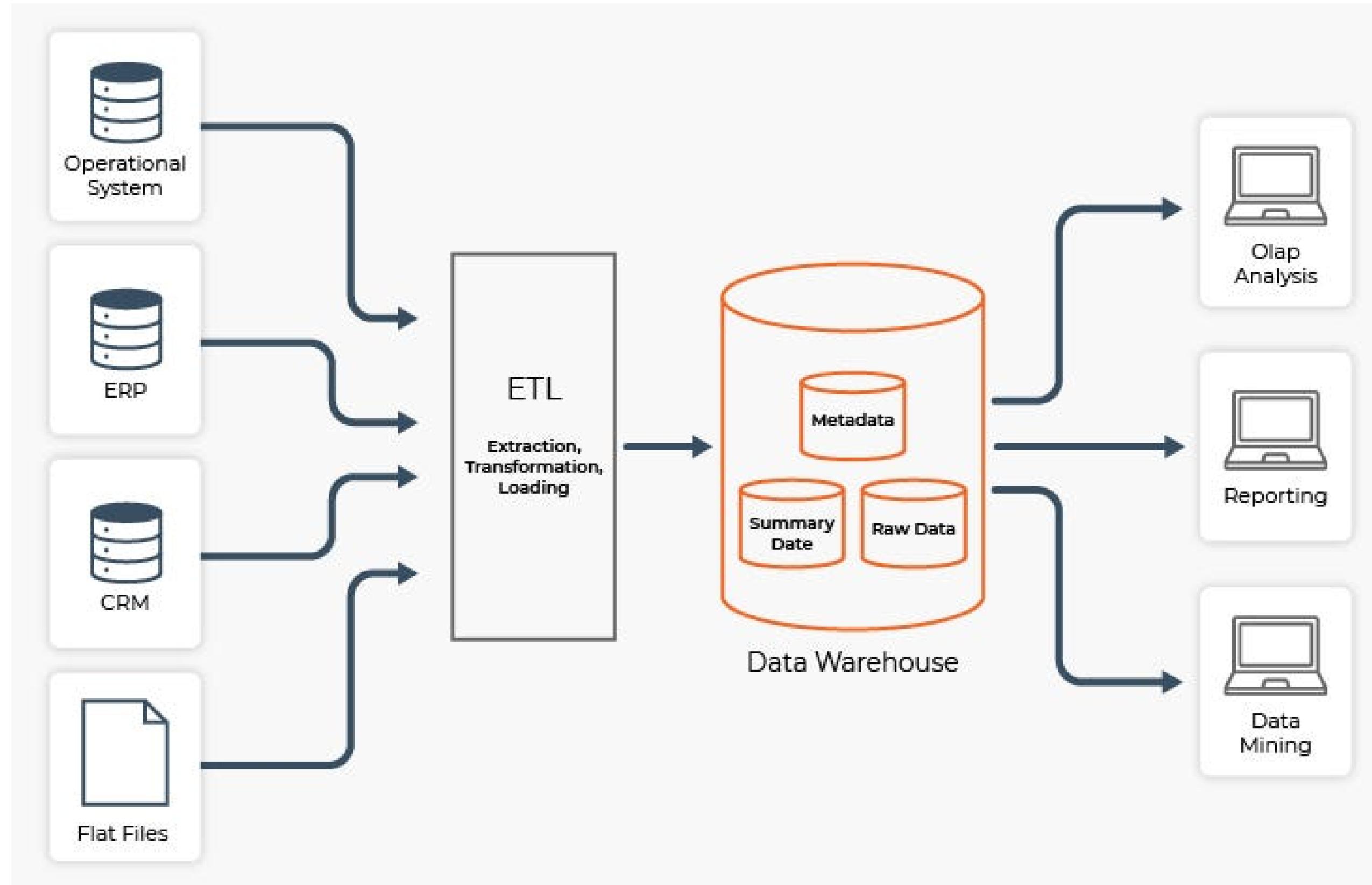
7. JIRA tools



Data Structures in Business

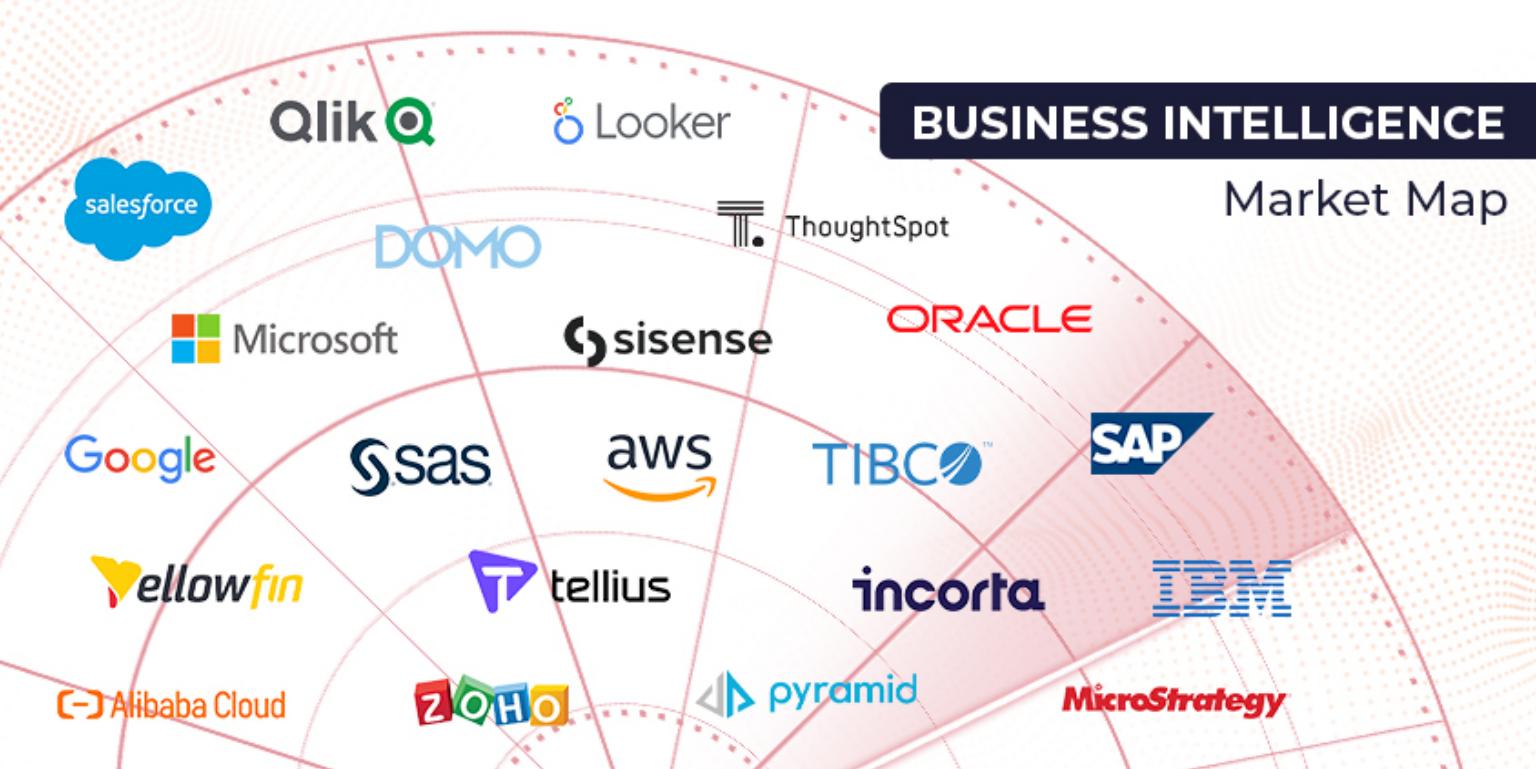
- **Databases:** Organized electronic data collections; types include SQL and NoSQL.
- **Data Warehouse:** Centralized storage for aggregated data; supports BI reporting and queries.
- **Data Lake:** Vast repository for raw data; ideal for big data and real-time analytics.
- **Operational Data Store (ODS):** Interim storage between databases and warehouses; aids operational reporting.
- **Data Mart:** A focused subset of a data warehouse; streamlined access for specific areas (e.g., sales).
- **Data Cube:** Multi-dimensional database for OLAP; facilitates complex queries and trend analyses.

Data Structures in Business



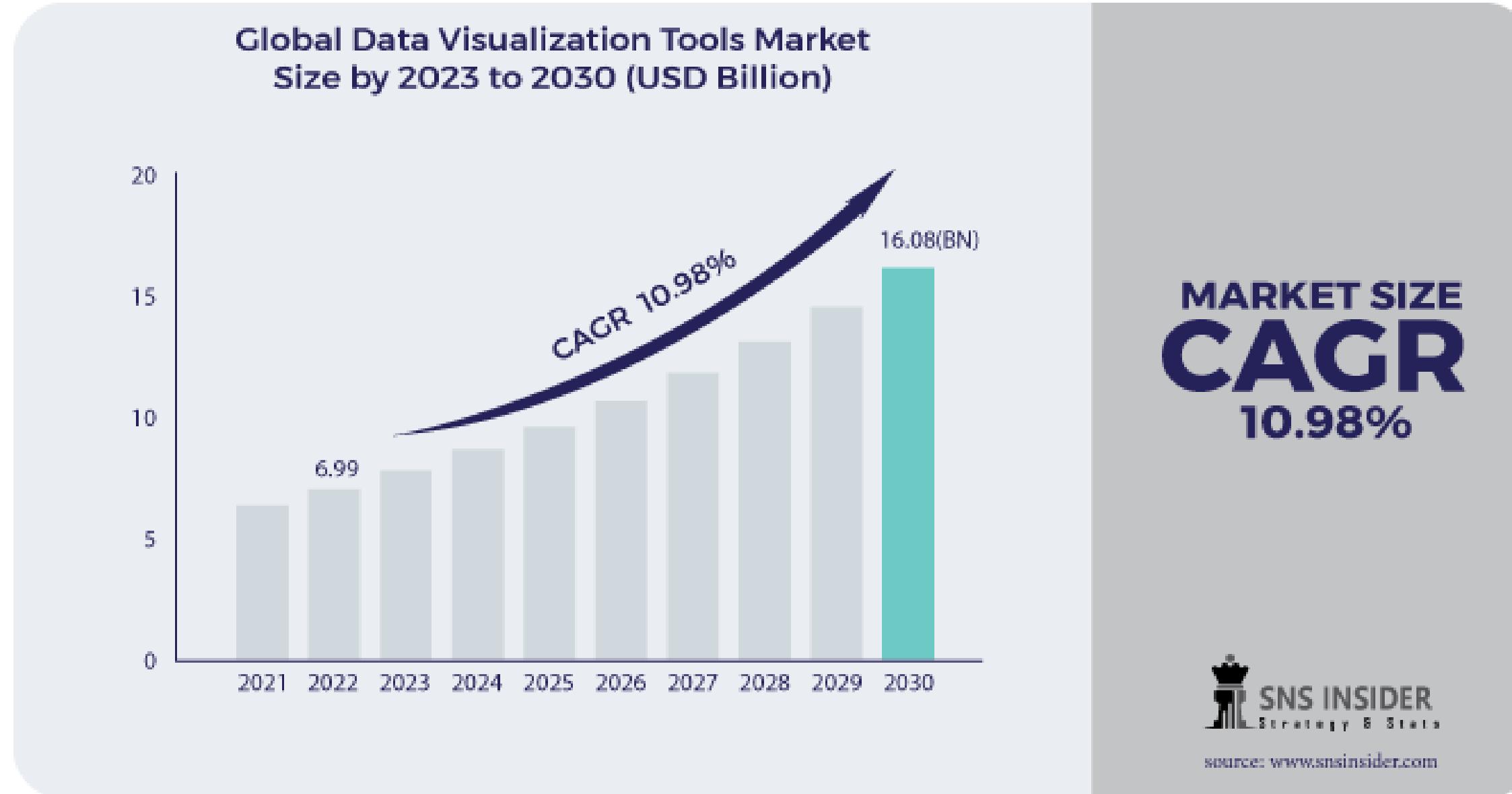
BI Tools

- Software that enables data visualization, analytics, and reporting.
- Examples: Tableau, Power BI, QlikView.
- Helps in transforming raw data into actionable insights.

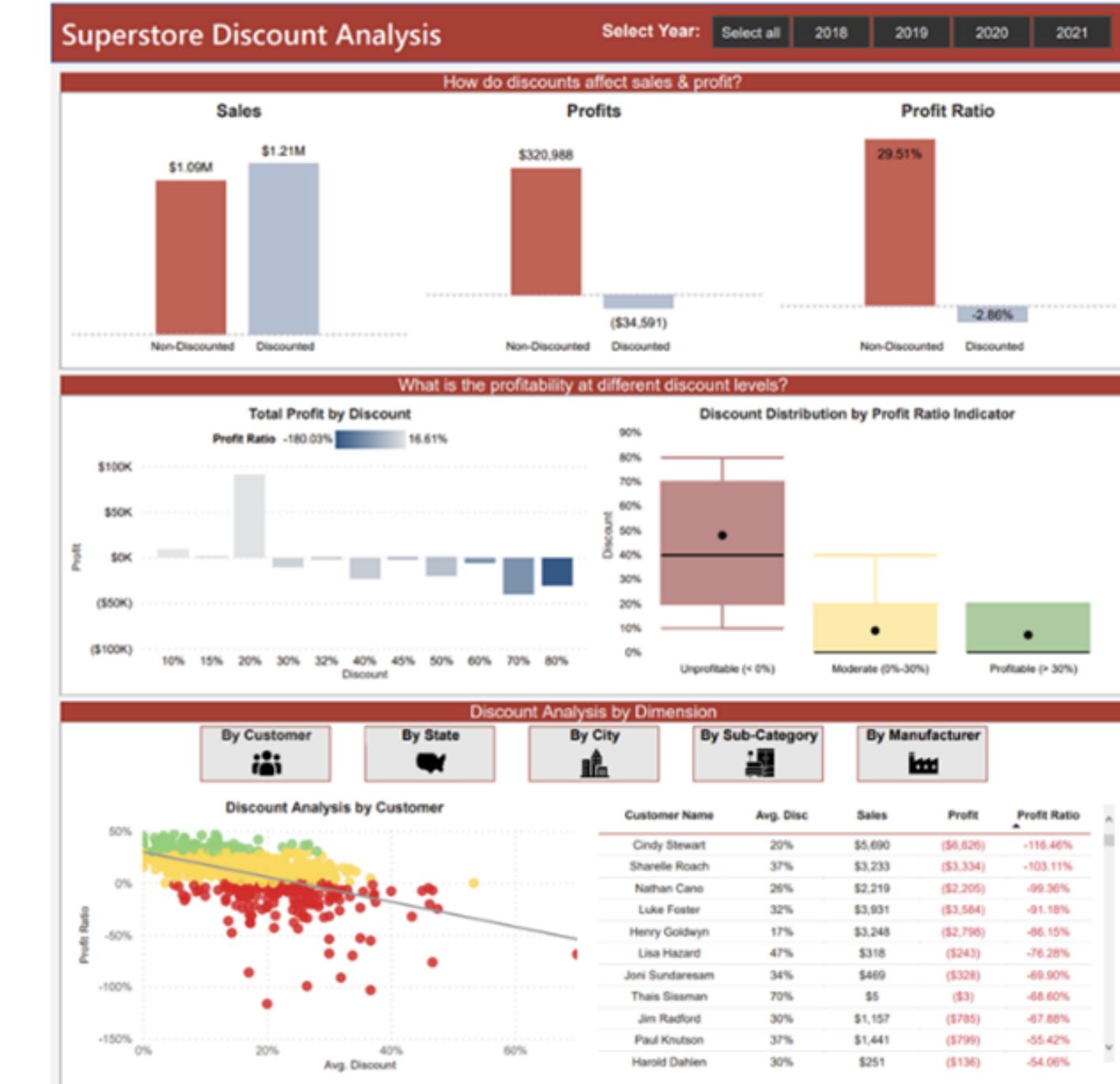
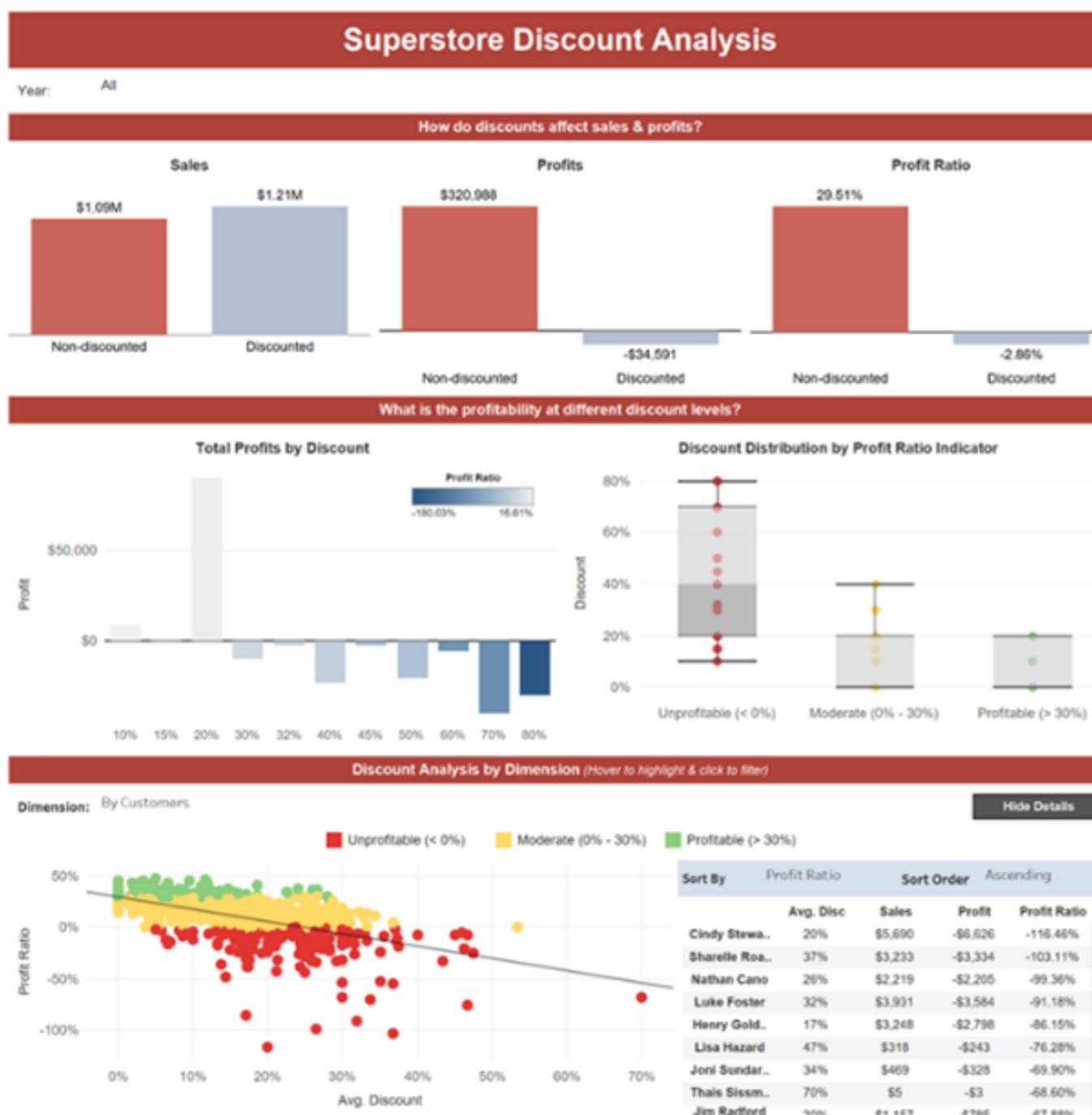


“The goal is to turn data into information, and information into insight.”
Carly Fiorina

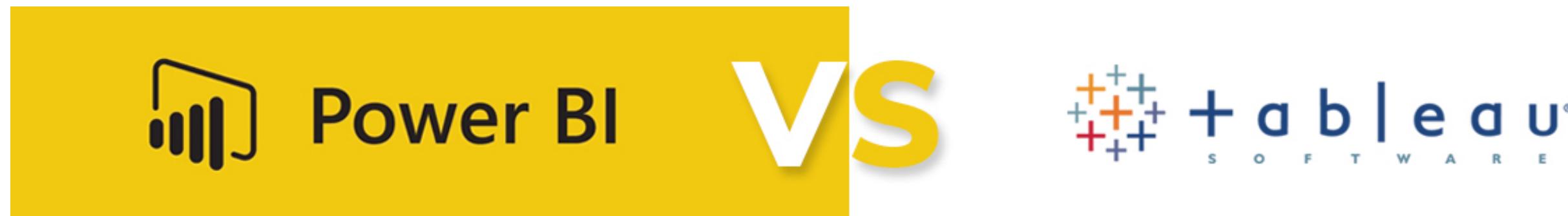
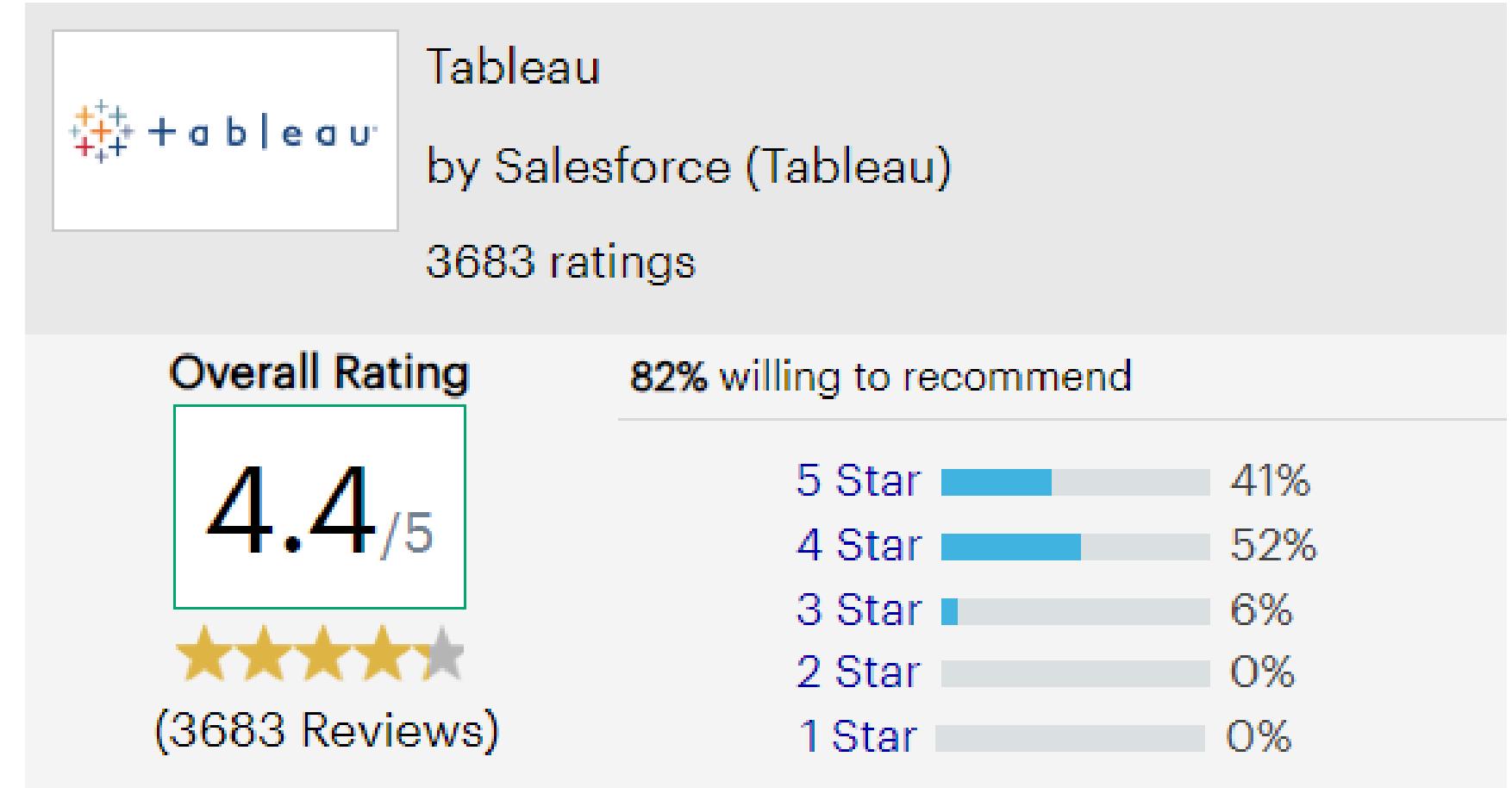
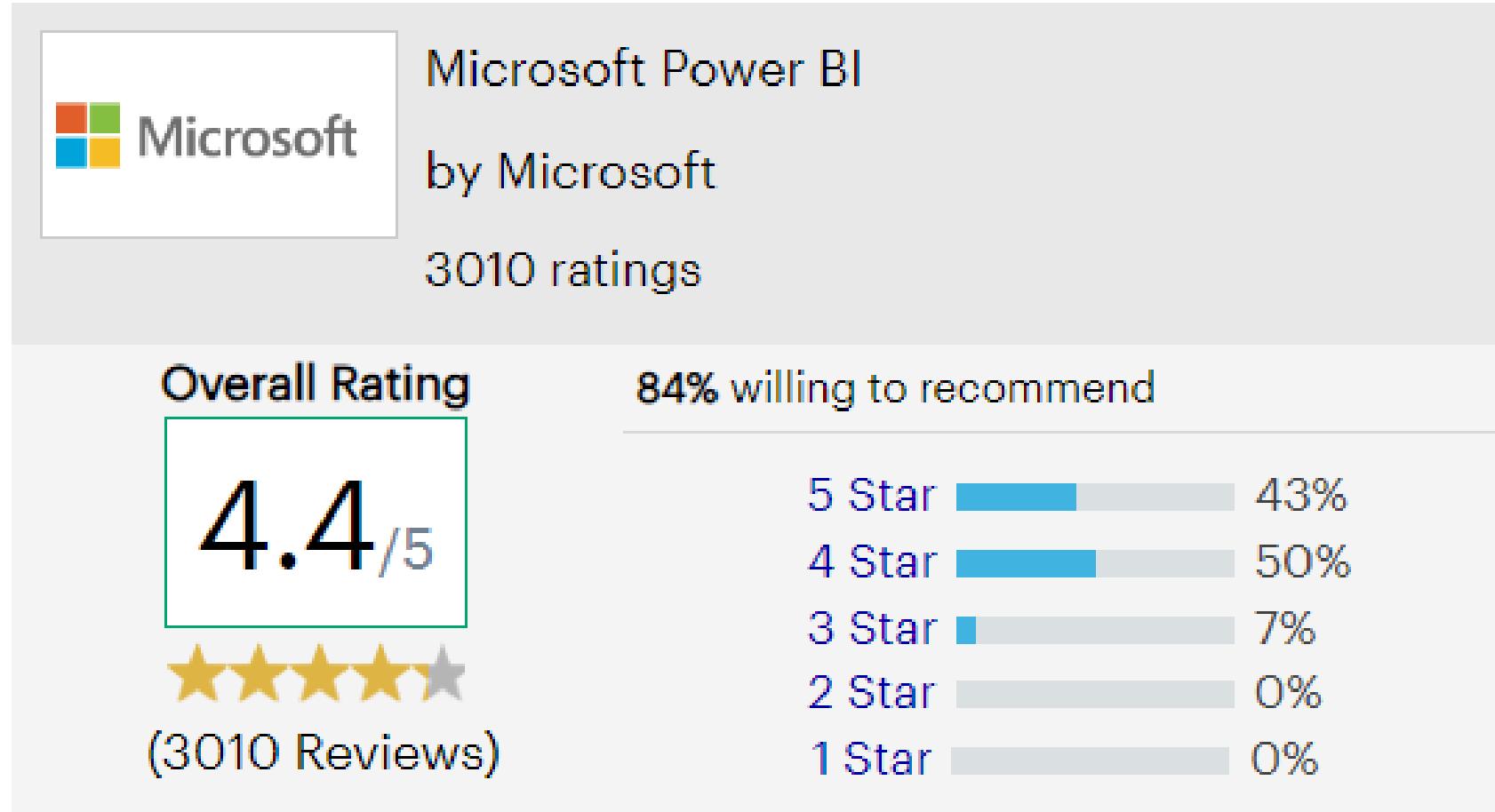
A Growing Market



Gartner Report 2023



Gartner Report 2023



KPI/OKR

- KPI: Key Performance Indicators - metrics to evaluate success.
- OKR: Objectives and Key Results - goal-setting framework.
- Used to track performance and achieve strategic objectives.

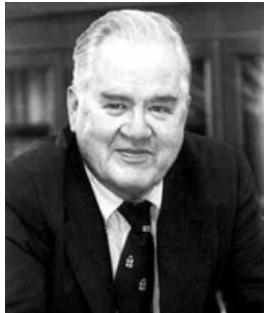
Example:

- KPI could be
 - Increase sales by 10% in Q3
- OKR might be
 - O: Increase market share in the mid-tier segment.
 - KR1: Launch two new products targeting the mid-tier audience.



Statistical Tests

- Procedures to determine if a hypothesis about a data set is true.
- Examples: t-test, chi-square, ANOVA, A/B test.
- Helps in decision-making based on data analysis.
- Application:
 - Testing if a new marketing strategy impacts sales, comparing average sales between groups.



“Statistics are the triumph of the quantitative method.”
John Tukey

Agile Management

- An iterative approach to project management.
- Promotes flexibility and customer satisfaction.
- Involves regular feedback and continuous improvement.
- Key principles: Daily stand-ups, sprints, and retrospectives.

